

JWG CIGRE-CIRED C4.107 ECONOMIC FRAMEWORK FOR VOLTAGE QUALITY

**CEER/EURELECTRIC WORKSHOP
“VOLTAGE QUALITY MONITORING”**

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MAIN OBJECTIVES

To develop a framework for analysis of the economics of power quality - in a REPORT that summarizes available information about cost-benefit analysis of PQ

Including to:

- reviewing documentation on PQ econom. Implications***
- reviewing methods of assessing costs***
- establishing methodology of collecting data***
- recommending methodology evaluating costs***
- providing indicative costs for specific cases***

To create a Web-based bibliography of existing references

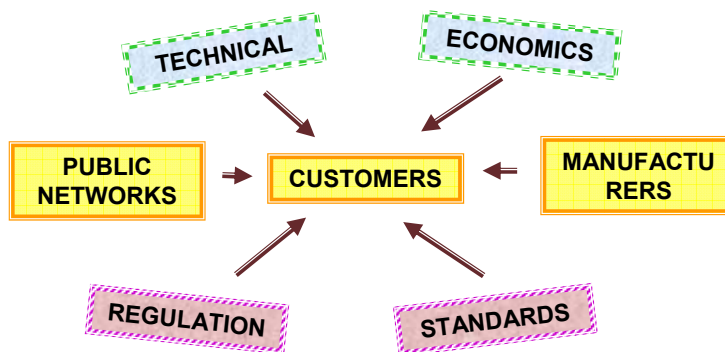
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COMPOSITION

Statistics by entities		Statistics by nations			
Academia	4	Austria	1	Italy	2
Institution	3	Australia	1	Netherl	1
Instrumentn	1	Belgium	1	Poland	1
Manufacturers	1	Canada	1	Spain	2
Research	6	France	1	Sweden	2
User	1	Germany	1	USA	3
Utilities	6	India	1	UK	3
TOTAL	22			TOTAL	21

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INVOLVED PARTIES



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PRECEDING

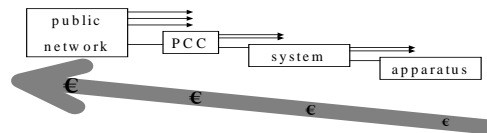
PQ problematic events (disturbances) causes cost at network level and customer (plant) level

Analysis of PQ costs → 2 approaches

- Global → to upgrading PQ level
- Individual cases → to solving PQ problems

Both cases applied to networks and customers

Hence → need to assessing trade-offs costs between involved parties



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MAIN APPROACH

For the purpose of evaluation and assessment

-it's proposed to separate PQ into two broad classes:

- quasi-stationary variations*
- discrete events*

-it's proposed to consider two economic analysis methods:

- direct*
- Indirect*

-It's proposed to consider:

- deterministic methods*
- probabilistic methods*

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STRUCTURE OF THE REPORT

- Chapter 1: Introduction to Economics of Power Quality**
- Chapter 2: Overview of methodologies for assessment of economic impact – End user perspective**
- Chapter 3: Overview of existent methodologies for assessment of economic impact – Public distribution network perspective**
- Chapter 4: Methodology for collecting Power Quality economic data**
- Chapter 5: Methodology for the economic assessment of power quality solutions**
- Appendixes**
- References**

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**CHAPTER 1: INTRODUCTION TO ECONOMICS OF
POWER QUALITY**

- 1.1.- Scope of this Report**
- 1.2.- Economics of Power Quality for End Users**
- 1.3.- Economics of Power Quality for Power Networks**
- 1.4.- Economics of Power Quality for Society**
- 1.5.- Role of Regulation**
- 1.5.- Overview of the document**
- 1.6.- References**

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**CHAPTER 2: OVERVIEW OF METHODOLOGIES FOR
ASSESSMENT OF ECONOMIC IMPACT – END USER
PERSPECTIVE**

- 2.1.- Methodology for quantifying the economic impact of voltage dips and short interruptions**
- 2.2.- Methodology for quantifying the economic impact of harmonics**
- 2.3.- Methodology for quantifying the economic impact of other PQ phenomena**
 - voltage and current unbalance*
 - surges and transients*
 - flicker*
- 2.4.- Conclusions**
- 2.5.- References**

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**CHAPTER 3: OVERVIEW OF EXISTENT
METHODOLOGIES FOR ASSESSMENT OF
ECONOMIC IMPACT – PUBLIC DISTRIBUTION
NETWORK PERSPECTIVE**

- 3.1.- Introduction**
- 3.2.- Review of literature and documented methodologies**
- 3.3.- Costs associated with PQ**
 - costs incurred by utilities to mitigate PQ*
 - costs associated with reliability but not PQ*
 - costs for responding to PQ issues*
- 3.4.- Conclusions**
- 3.5.- Summary**
- 3.6.- References**

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**CHAPTER 4: METHODOLOGY FOR
COLLECTING POWER QUALITY ECONOMIC
DATA**

- 4.1.- Introduction**
- 4.2.- Importance and motivation**
- 4.3 - End-User perspective**
- 4.4.- DNO perspective: data collection**
- 4.5.- Conclusions**
- 4.6.- References**

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**CHAPTER 5 METHODOLOGY FOR THE ECONOMIC
ASSESSMENT OF POWER QUALITY SOLUTIONS**

- 5.1.- Methodology**
- 5.2.- Economic analysis of the cost of PQ**
- 5.3.- End-Use PQ solutions**
- 5.4.- Choosing the optimal PQ solution**
- 5.5.- Conclusions**
- 5.6.- References**

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CONCLUSIONS

RESULTS

The Guide Economic Framework for PQ shall be edited in 2010

A web-based bibliography of existing references on topics of PQ economics is being created